Mathematics, Statistics, and Computer Science **@ UIC**

Geometry, Topology and Dynamics Seminar

Entropy, invariance, and rigidity of lattice actions

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Abstract: Recently, joint work with S Hurtato (uChicago) and D. Fisher (Indiana) and myself established following case of the Zimmer conjecture: given a cocompact lattice in Sl(n,R), any action by diffeomorphisms on a (n-2) dimensional manifold factors through the action of a finite group. The prove has two main new ingredients: (1) strong Banach property (T) and (2) an invariance principle for G-actions on bundles over G-homogeneous spaces. The second ingredient was developed in joint work with F. Rodriguez Hertz (Penn State) and Z. Wang (Penn State) where we establish that the action of any lattice in Sl(n,R) on a (n-2) dimensional manifold preserves a Borel probability measures.

In this talk I will outline some tools and techniques from smooth ergodic theory used to prove the invariance principle mentioned above. I will discuss Lyapunov exponents, (coarse) unstable manifolds, and conditional metric entropy for diffeomorphisms and actions of higher-rank Abelian groups. At the end, I hope to indicate how these ideas are used in the proof of the results discussed above.

Monday, September 12 at 3:00 PM in SEO 636